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Amplifying Player Experience to Facilitate Prosocial Outcomes in a Narrative-Based Serious Game

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Abstract

The rise and development of serious games have shown promise in addressing critical social issues, including school bullying. However, prior work often compares game-based interventions with the conventional non-game approach, failing to generate insights about which game features should be emphasized to create more effective games. To bridge this research gap, in light of video games' advantages for creating immersive experiences that benefit persuasion, we created a narrative-based serious game addressing school bullying and conducted two studies (Study 1, $N = 130$; Study 2, $N = 250$) to explore the persuasive effects of two game features, respectively player–avatar similarity and in-game control, on player experience (including player–avatar identification, narrative engagement, and empathy) and prosocial intention. We found mixed results subject to player perspective such that only when players took the bully's perspective did one of the game features—in-game control—successfully create the intended empathy via amplified narrative engagement toward the desirable prosocial intention.

Keywords

empathy; in-game control; narrative engagement; player–avatar identification; player–avatar similarity; prosocial intention; serious game

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1. Introduction

Bullying as a major form of school toxicity causes tremendous long-lasting physical and psychological damage to both victims and bullies (Copeland et al., 2013). Through two studies, we add to an emerging body of research considering the potential for narrative-based serious games to create empathy and potentially reduce bullying behavior or tolerance (Q. Chen et al., 2023). In doing so, we add to theory on the mechanisms by which serious games specifically and immersive narratives in general can generate prosocial outcomes. In particular, we test whether specific game design features are ways to increase the effectiveness of a serious game, moving beyond general tests of games versus other non-game formats to consider specific common features that can be integrated into game-based bullying interventions.

2. Literature Review

2.1. Serious Games for Bullying Interventions

Capitalizing on the entertaining aspect of gameplay, serious games are mainly developed to educate, inform, and persuade players, helping them gain positive personal growth and internalize and act upon prosocial values (Michael & Chen, 2006; Peng et al., 2010). Serious games have been shown to be effective educational tools with positive outcomes across multiple contexts (Canet & Sánchez-Castillo, 2024), including improvements in mental health behaviors and attitudes (David et al., 2020). Research has indicated a link between playing prosocial games and subsequent attitudinal or behavioral outcomes that align with the game's message, based on the interactivity of the game (E. Lee et al., 2022) or simply individuals' general empathy (Davis, 2006) or awareness of the particular problem (e.g., bullying) within the game (Calvo-Morata et al., 2021).

Several serious games have been developed to address the issue of school bullying (e.g., Bradley & Kendall, 2019; Calvo-Morata et al., 2021; Garaigordobil & Martínez-Valderrey, 2015) and reviews and meta-analyses both support the use and effectiveness of such game-based tools (Calvo-Morata et al., 2020; Q. Chen et al., 2023). Yet, most relevant research focuses on comparing digital interventions to other approaches, and the outcome variables considered vary widely (Q. Chen et al., 2023). In this respect, despite growing literature on the topic, some notable gaps remain. It is unclear which features game developers should emphasize in creating serious games on the topic of bullying, and how the outcomes of such games can relate to a broader theoretical literature on persuasion through narrative and the creation of empathy through immersive experiences.

2.2. Engaging Experience With Narrative-Based Serious Gameplay

In order to realize and understand the potential of serious or persuasive games, scholars must identify specific features and mechanisms that contribute to their success. In this article, we focus on the specific outcome of game-induced empathy. Moreover, we propose that *narrative engagement* with a narrative-based serious game, including identification with characters, is key to the generation of empathy.

Several studies have used either a general approach to engagement or specific dimensions of engagement in predicting positive outcomes, including persuasion and enjoyment (Sherrick, 2018). Research in this area includes studies showing the importance of narrative engagement to eudaimonic enjoyment (Daneels et al.,

2021; Possler et al., 2020), games for health (Green & Jenkins, 2020; Zhou et al., 2020), and serious games (E. Lee et al., 2022; Naul & Liu, 2020; van't Riet et al., 2018). We follow the approach of Busselle and Bilandzic (2009), who proposed a measure that combined aspects of transportation, presence, emotional engagement, and attentional focus to offer a generalized measure of narrative engagement—"A state of intense cognitive and emotional focus on the story" (Bilandzic & Busselle, 2013, p. 208). Such a general approach may miss subtle variations in the experience of stories but has the benefit of both capturing the main mechanisms by which stories are thought to influence audiences and reflecting the broad mental models that people build. Narrower conceptualizations and measures risk imposing distinctions on user experiences that may not actually exist in their own understanding of a game or story.

There are several reasons to emphasize narrative engagement in the context of serious games. First, existing meta-analyses of the effectiveness of such games almost exclusively focus on titles with narrative elements (e.g., Girard et al., 2013). Despite Bogost's idea of persuasion through the mechanics of games (2007), most serious games use story to help persuade. Second, a significant body of literature shows the effectiveness of narrative persuasion (Braddock & Dillard, 2016; Ratcliff & Sun, 2020; F. Shen et al., 2015). Third, the specific goal of creating empathy encourages the use of narrative and identifiable characters. When players encounter an in-game character outside their immediate control, they have the opportunity to reflect on the motivations of that character and develop an understanding of the experiences and reasoning of others. Removing narrative elements and using an avatar who is totally interchangeable with the player minimizes the opportunity for engagement and empathy.

The literature on narrative persuasion in general offers multiple explanations for how serious games can persuade through the creation of engagement. The extended elaboration likelihood model suggests that narratives help to make complex information more digestible and comprehensible to a general audience (Slater & Rouner, 2002); the transportation imagery model posits that the immersive nature of narratives can take someone out of their own personal world and instead into the story world (Green & Brock, 2000). To synthesize these earlier theoretical advancements, Moyer-Gusé (2008) proposed an entertainment overcoming resistance model that exhaustively outlined experiential antecedents to reducing resistance, arguing that people's vicarious experience of in-story characters' cognitions, emotions, and behaviors would make it difficult for people to allocate their cognitive and affective resources to initiating counterarguing against persuasion (Slater & Rouner, 2002).

Taken further, when comparing interactive and traditional narrative-based messages, Green and Jenkins (2014) note that interactive narratives offer an individual multiple branch points inside the narrative to determine the direction and possible consequences of the plotline. This actively enlists the individual as a co-creator of the plotline, theoretically encouraging higher levels of transportation. In addition, interactive storytelling also encourages higher levels of enjoyment, and research has found that an enjoyable narrative experience is conducive to producing desirable persuasion outcomes (T. K. Lee & Kim, 2022). Serious gameplay has the natural advantage of facilitating such interactive storytelling.

2.3. Persuasive Game Features

To increase the persuasiveness of narrative-based serious games, it is promising to leverage game features that can effectively enhance players' narrative engagement. In accordance with the characteristics of narratives,

that is, character and plot (see Bilandzic & Busselle, 2013), we consider two game features as direct enablers of narrative engagement: player–avatar similarity and in-game control.

2.3.1. Player–Avatar Similarity

When processing narrative information, there exists an internal process where the message recipient resonates with and takes in the experience of a character (i.e., identification; Cohen, 2001), which can have further persuasive power by motivating behavioral mimicry or fostering favorable attitudes toward the character. Hence, the key to enhancing narrative engagement lies in designing the right avatar that the player controls. A recent meta-analysis related to narrative persuasion and character attributes concluded that the strongest persuasive impact occurred when the similarity between character and message recipients was made salient on prominent demographic and biographic characteristics (M. Chen et al., 2024). Hence, we focus on player–avatar similarity based on demographics and predict that increasing the similarity between a player and their controlling avatar will enhance their perception of player–avatar similarity. The perceived similarity then blurs the boundary between one's identity in real life and that in the game world, helping the player internalize the thoughts and feelings of their controlling avatar (Cohen, 2001), which facilitates the development of player–avatar identification (Li et al., 2013). With identification heightening one's emotional and cognitive connections with their controlling avatar (Fernández Galeote & Hamari, 2021), a player who identifies with their avatar is further likely to experience higher engagement with the narrative-based serious gameplay. Based on this rationale, we propose the following hypotheses:

> H1: A high level of player–avatar similarity will increase one's perceived similarity with their avatar.

> H2: One's perceived player–avatar similarity is positively associated with their player–avatar identification.

> H3: One's player–avatar identification is positively associated with their narrative engagement.

2.3.2. In-Game Control

As a highly interactive medium, video games enable player control in many different ways, including customizing their representation (via the player avatar), the pace and general direction of gameplay (via gameplay decisions and navigation within game space), and even the content presented in a game's narrative (Toh, 2023). All these methods have been found to be linked with an elevated sense of in-game mastery agency over the presentation and flow of a video game experience in empirical research (e.g., Kim et al., 2015). Specifically, research suggests that it is the player's control over the flow and mechanics of the narrative experience that fosters deep engagement with video game narratives (Tanenbaum & Tanenbaum, 2010). The greater the level of control over gameplay, the greater a player's perception of their in-game autonomy should be. The degree of control over the content and flow of the experience influences players' perception of autonomy within the gameplay experience. Additionally, the degree of player identification with in-game avatars has been found to predict both immersion and autonomy (Birk et al., 2016), suggesting that players' perceptions of autonomy should be positively associated with how strongly they identify with their avatars. By affording players a high level of control (and, by extension, autonomy) in the context of an

interactive anti-bullying story for school students, stronger connections between players and both their in-game avatars as well as in-game actions can be established and problematized. We then predict:

H4: A high level of in-game control will increase one's perceived autonomy during gameplay.

H5: One's perceived autonomy is positively associated with their player–avatar identification.

H6: One's perceived autonomy is positively associated with their narrative engagement.

That said, although we expect the increased narrative engagement will attenuate resistance to persuasion, there are usually no *explicit* persuasive messages in serious games for players to counterargue with. That is, unlike designing campaign messages that usually include explicit persuasive arguments (e.g., "stop doing this"), serious game development tends not to carry out outright persuasion, but instead focuses more on amplifying player experience. In this respect, narrative-based serious gameplay might function better to foster prosocial cognitive and affective abilities.

Kors et al. (2018) pointed out that a common characteristic of prosocial persuasive games was their focus on building *empathy* among players to "feel and understand the struggles of another" (p. 493). On top of that, narratives have been found effective in initiating empathic processes (Oliver et al., 2012). Hence, there is great potential for narrative in serious games to create empathy as a result of increasing narrative engagement.

2.4. Creating Empathy in Persuasive Games

Although sometimes conceptualized as multidimensional, empathy is broadly defined as a process of sharing and understanding others' internal states (e.g., other's emotions and perspectives; Zaki & Ochsner, 2012). Under some circumstances, empathy seems to be automatic. However, past research has found empathy as effortful (e.g., Epley et al., 2004). That is, to empathize requires cognitive effort, and people avoid empathy when they perceive it to be more effortful and feel less efficacious in sharing others' perspectives and experiences (Cameron et al., 2019). According to this perspective, factors that enhance one's cognitive capacity to take another's perspective or share their experience and factors that reduce the needed effort for empathy should facilitate empathy.

A recent review suggests that high narrative engagement could enable the activation of social cognitive processes, including perspective-taking and empathy (Eekhof et al., 2022). In mediated environments (e.g., digital games, virtual reality, interactive narratives), individuals' cognitive resources may be allocated to both processing the information in the narratives and responding to the stimuli in their physical environments. The more narrative engagement, the more attention will be paid to the narratives, thereby preserving more cognitive resources available for individuals to empathize with the characters in the narratives. Specifically, in digital games, as players become more immersed in the game narrative, they pay greater attention to the in-game activities such as their interaction with the non-player characters (NPCs) and less attention to the world outside the game (Busselle & Bilandzic, 2009). Hence, greater cognitive resources will be allocated to processing the information related to the NPCs, which will further enable the players to take the NPCs' perspectives more easily, i.e., to empathize with the NPCs (Morelli & Lieberman, 2013).

Empirical research findings are generally congruent with the expectation that more engagement with the game narrative leads to greater empathy toward characters in the stories. For example, Wulansari et al. (2020) found that, in video games, morally engaging narratives increased players' perspective-taking, and perceived immersion was positively associated with empathy. Similarly, Shliakhovchuk (2024) found that in an immersive game (Papers, Please), by playing as an immigration inspector who decided whether a refugee should be admitted or turned away, participants experienced greater empathy for refugees, which led to more positive attitudes toward refugees. Therefore, we predict:

H7: One's narrative engagement is positively associated with their empathy toward the target NPCs.

2.5. Effect on Prosocial Intention

Taken further, the game-induced experience could affect prosocial intention, that is, one's voluntary actions that intend to benefit others (Batson & Powell, 2003). Specific to school bullying, DeSmet et al. (2018) found their 30-minute serious game effectively increased students' intention to act as a positive bystander to a bullying victim. Willems et al. (2024) found their four-week intervention program, encompassing a serious game, increased students' intention to help a victim in bias-based bullying situations (e.g., bullying based on race).

What could account for such game-induced influence? First, following what the entertainment overcoming resistance model postulates (Moyer-Gusé, 2008), players who become engaged with the game narrative may be more likely to act consistently with what is depicted in narrative outside of the gaming environment. For example, H. M. Lee and Li (2023) corroborated that higher immersion into immersive media was related to a higher intention to volunteer and donate to humanitarian causes. Second, decades of research using varied methods has shown a robust link between empathy and prosocial outcomes. As players develop empathy toward video game characters, they may be more likely to take the perspectives of those characters, understand their situations, and even experience the same emotions as those characters, resulting in prosocial intentions (Davis, 2006). For instance, Prot et al. (2014) found that children's prosocial gameplay in the first year predicted their level of empathy in the subsequent year, which in turn predicted their later prosocial behaviors. Hence, we predict:

H8: One's narrative engagement is positively associated with their prosocial intention after gameplay.

H9: One's empathy toward the target NPCs is positively associated with their prosocial intention after gameplay.

Figure 1 presents the conceptual model of our study.

3. Study 1

3.1. Method

We conducted a 2 (player–avatar similarity: low vs. high) × 2 (in-game control: low vs. high) online between-subjects experiment with the experimental protocol approved by the pertinent institutional review
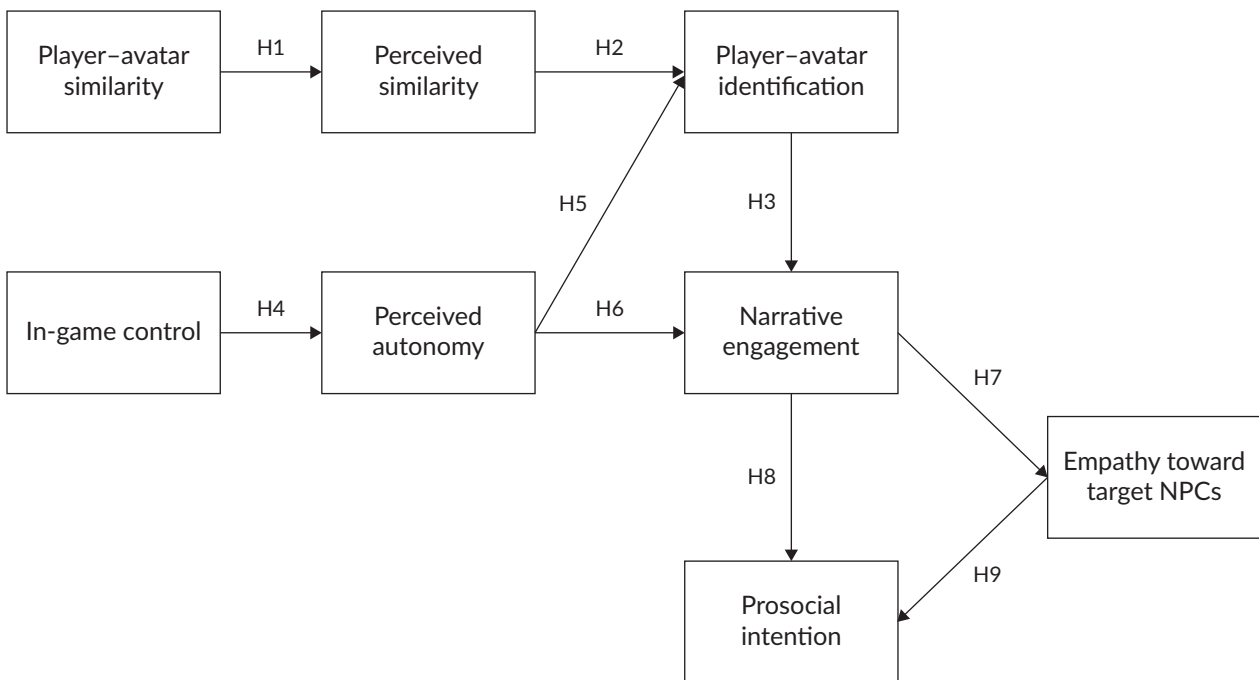
Figure 1. Conceptual model.

board. The data collection lasted from October 2019 until May 2021, with the extended time frame due to recruitment challenges and then the Covid-19 pandemic. The study proceeded as follows: After providing their informed consent, participants first self-reported their gender and race; then, they were randomly assigned to play a version of the game with features specific to their experimental condition; after that, they completed a questionnaire asking about their perception of and experience with the gameplay; finally, they were thanked and credited for their participation.

3.1.1. Game Design

We designed a role-playing serious game using the software RPG Maker MV (https://www.rpgmakerweb.com/ products/rpg-maker-mv), in which participants played the game as the central character, who went through a typical school day and interacted with students, staff, and faculty in four designated scenes. During those interactions, participants acted as a bully or victim in an alternating manner (i.e., twice as a bully, twice as a victim) for a richer experience; they interacted with four designated NPCs who were victims (Characters 1 and 3) or bullies (Characters 2 and 4) accordingly. More details of the game design can be found via the link in the Data Availability section.

Altogether, there are a total of 16 versions of the game depending on the experimental manipulation. Player–avatar similarity was manipulated by assigning participants an avatar that matched their self-report demographic attributes (i.e., gender and race) in real life or not, for which we created eight avatars by gender (female and male) and race (Asian, Black, Latino/a, and White). For participants assigned to the high similarity condition, the avatar exactly matched their self-reported gender and race; for participants assigned to the low similarity condition, an avatar matching neither their gender nor race was randomly assigned; for participants who self-reported to identify with non-binary gender and/or more than one racial category, they were randomly assigned to an avatar. In addition to the visual representation of race and gender, these

traits were reinforced by an early moment in the game where players were compelled to look in a mirror and given a description of their racial/ethnic and gender identity.

Regardless of experimental condition, participants could exercise the same level of basic control over their avatar by navigating freely around each small stage and interacting with a small number of items. The experimental manipulation of in-game control (i.e., the other critical persuasive game feature for the study) involved whether participants were able to make choices (among three options in a given dialogue when interacting with a target NPC) in the gameplay. Such choices occurred in both bully-related interactions (e.g., which kind of insults to use when acting as a bully) and unrelated ones (e.g., deciding on what outfit to wear for the day to get started). For participants assigned to the conditions where such critical control was absent, in those designated dialogues, one of the same three options was programmed to be randomly presented.

3.1.2. Sample

We recruited 130 participants from undergraduate classes at a large public university in the United States. They signed up for the study in exchange for extra course credits. There were 38 males, 91 females, and 1 indicating "other" (M_{age} = 20.77 years, SD_{age} = 3.68). Among all, 88 self-identified as White, 24 as Asian, 8 as Hispanic/Latino, 8 as Black, and 2 as "other."

We ran a post hoc power analysis to examine if our sample was sufficient for hypothesis testing. A recent meta-analytic review revealed a medium effect size (based on Cohen, 1992) for the positive influence of immersive media on individual prosociality (Canet & Sánchez-Castillo, 2024). Although there is a lack of generalized effect size of serious games in the context of school bullying, given the immersive nature of gameplays, we decided to adopt the medium effect size as the benchmark. With the analysis of variance as the target statistical analysis, effect size f = .25 (i.e., the medium effect size based on Cohen, 1992), α = .05, and sample size N = 130, we used the G*Power software (Faul et al., 2007) and calculated that our study could achieve a statistical power of .81.

3.1.3. Measurement

Unless indicated otherwise, all variables were measured on a 7-point Likert scale where 1 = *strongly disagree* and 7 = *strongly agree*. Bivariate correlations among measured variables are presented in Table 1. Details about the measurement and descriptive statistics by experimental conditions can be found via the link in the Data Availability section.

Perceived similarity with the central game character was measured with three items such as "the character and I have similar physical attributes," *Cronbach's α = .94, M = 2.24, SD = 1.59*.

Perceived autonomy while playing the game was measured with three items such as "The game provided me with interesting options and choices" (Neys et al., 2014), *Cronbach's α = .73, M = 2.69, SD = 1.28*.

Player–avatar identification was measured with three items adapted from Li et al. (2013) such as "the character and I were one and the same," *Cronbach's α = .71, M = 2.20, SD = 1.16*.

Table 1. Bivariate correlations in Study 1.

	Perceived similarity	Perceived autonomy	Player–avatar identification	Narrative engagement	Empathy toward victim NPCs	Empathy toward bully NPCs	Prosocial intention
Perceived similarity	—						
Perceived autonomy	.23**	—					
Player–avatar identification	.42***	.56***	—				
Narrative engagement	.18*	.28**	.30***	—			
Empathy toward victim NPCS	.10	.18*	.15†	.55***	—		
Empathy toward bully NPCs	.31***	.29***	.48***	.22*	.33***	—	
Prosocial intention	−.03	.15†	.07	.16†	.10	−.02	—

Notes: * $p < .05$; ** $p < .01$; *** $p < .001$; † $p < .10$; all 2-tailed.

Narrative engagement was measured using 12 items such as "at times during the gameplay, the story world was closer to me than the real world" (Busselle & Bilandzic, 2009), *Cronbach's α* = .77, *M* = 4.00, *SD* = .89.

Empathy toward the target NPCs was measured respectively using 12 items, such as "I can feel the character's emotions" (L. Shen, 2010). We averaged the scores of empathy toward the two victim NPCs and those toward the two bully NPCs separately to create a respective index measuring participants' empathy toward the victim (*Cronbach's α* = .95, *M* = 4.32, *SD* = 1.31) and empathy toward the bully (*Cronbach's α* = .93, *M* = 2.58, *SD* = 1.41).

Prosocial intention was measured by asking participants "after playing the game, how likely are you," to which they responded to four prompts such as "to give help to bullied students?" (Paek et al., 2012), *Cronbach's α* = .90, *M* = 4.91, *SD* = 1.54.

3.2. Results

Prior to hypothesis testing, we performed a set of analyses of variance to explore the total causal effects of persuasive game features on players' experience with the gameplay and prosocial intention. The statistics can be found in our supplementary materials via the link in the Data Availability section.

3.2.1. Original Model

To test our hypotheses, we conducted a path analysis using SPSS Amos 26 (IBM, 2022). The model fit is not ideal, χ^2 (DF = 23) = 67.41, $p < .001$, CFI = .812, TLI = .705, RMSEA = .122 (90%CI [.089, .157],

PCLOSE < .001). However, we decided to proceed with interpreting the path coefficients, which are still informative, and consider implications of the model fit afterward.

As shown in Figure 2, in support of H1, H2, and H3, playing an avatar similar to oneself increased perceived player–avatar similarity, which was further positively associated with player–avatar identification, and then narrative engagement.

For the other persuasive game feature, in support of H4 and H5, a higher level of in-game control increased one's perceived autonomy during the gameplay, which was further positively associated with player–avatar identification. Yet, rejecting H6, increased perceived autonomy was not significantly associated with more narrative engagement.

Furthermore, supporting H7, we found a significant positive association between narrative engagement and empathy; the association was stronger for empathy toward victim NPCs than empathy toward bully NPCs. However, neither narrative engagement nor empathy were associated with one's prosocial intention after gameplay in a significant manner, thus rejecting H8 and H9.

3.2.2. Modified Model

Recognizing the somewhat poor model fit, we followed prior work (e.g., Meier et al., 2020; Rieger et al., 2014) and added three paths to improve the model fit as shown in Figure 3, respectively (a) perceived similarity → empathy toward bully NPCs, (b) perceived autonomy → empathy toward bully NPCs, and (c) player–avatar identification → empathy toward bully NPCs. When checking the modification indices to
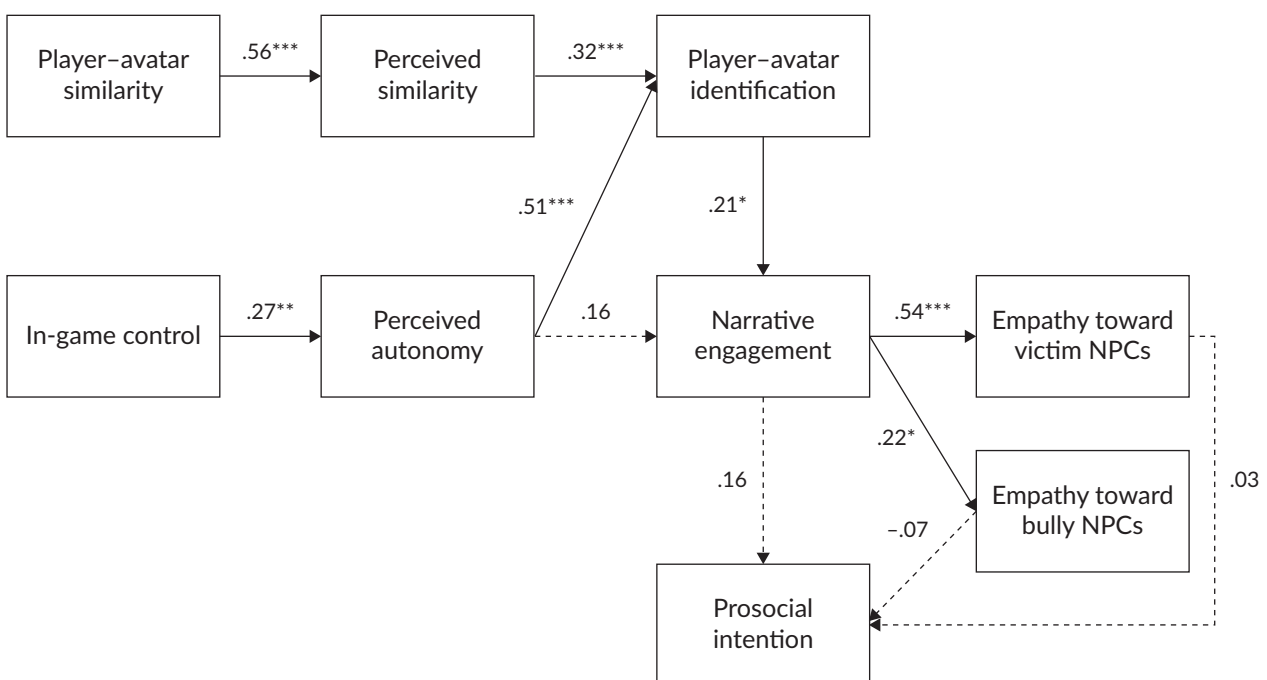

Figure 2. Path analysis model with standardized coefficients (β) in Study 1. Note: *** $p < .001$, ** $p < .01$, * $p < .05$.
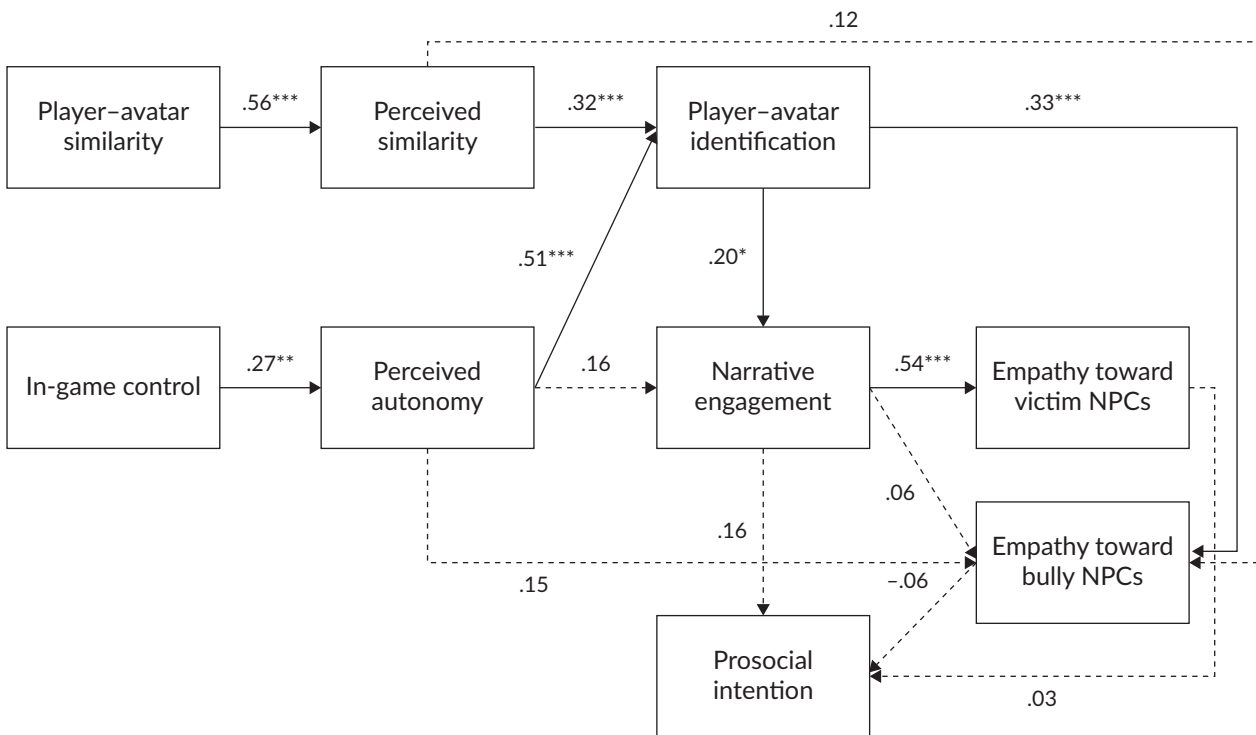
Figure 3. Modified path analysis model with standardized coefficients (β) in Study 1. Note: *** *p* < .001, ** *p* < .01, * *p* < .05.

improve model fit, SPSS Amos suggested co-varying the error terms of those variables. Yet, due to the lack of theoretical reasoning and concerns that this might subject our results to chance and sample-specific idiosyncrasies (Landis et al., 2010; MacCallum et al., 1992), we decided to add the directional paths instead considering their high correlations as shown in Table 1.

The fit for the modified model improved, χ^2 (DF = 20) = 30.65, *p* = .06, CFI = .955, TLI = .919, RMSEA = .064 (90%CI [.000, .107], PCLOSE = .28). With the modified model, we still found support for H1, H2, H3, H4, and H5. There was partial support of H7 such that narrative engagement was positively associated with empathy toward victim NPCs, but not with empathy toward bully NPCs. For the three newly added paths, we found a significantly positive association between player–avatar identification and empathy toward bully NPCs.

3.3. Discussion

In Study 1, we found some indication of specific game features amplifying player experience and generating empathy in a narrative-based serious game. However, neither narrative engagement nor empathy significantly predicted prosocial intention. Reflecting on the study procedure and results, especially the significant positive associations between empathy toward bully NPCs and other perceptual variables (as shown in Table 1), we speculate that our game design, which had participants act as both bullies and victims, might have interfered with their empathic processes that should have led to desired prosocial outcomes. Another possibility is that, although we proposed a conceptual model (Figure 1) derived from the gaming and persuasion literature, the poor fit of the tested model could indicate the presence of alternative mechanisms and/or the misalignment between theory and empirical data.

Without further evidence, it was difficult to conclude whether some of our null findings resulted from study-specific idiosyncrasies, the mis-specified conceptual model, or a combination of both. We therefore decided to conduct Study 2 to better address the role of the player perspective, exploring whether we could replicate findings from Study 1 with the same model. We propose an overarching research question as follows:

> RQ1: How does player perspective (as victim vs. as bully) influence the effects of persuasive game features on player experience and prosocial intention?

4. Study 2

4.1. Method

We conducted a 2 (player–avatar demographic similarity: low vs. high) × 2 (in-game control: low vs. high) × 2 (player perspective: as victim vs. as bully) online between-subjects experiment lasting from October 2023 until March 2024 at two universities in the United States. The study procedure was consistent with that in Study 1.

4.1.1. Game Design

Building on the game design in Study 1, we further varied the perspective that participants would take during the gameplay and revised other parts of the game accordingly, resulting in a total number of 32 versions of the game. For participants assigned to the as-victim condition, in the four designated dialogues, they received insults from the respective bullying NPCs. For participants in the as-bully condition, in those scenarios, they acted as the bully to insult the respective victim NPCs.

4.1.2. Sample

A total of 426 undergraduate students signed up for the study. After filtering out incomplete responses, the final dataset consisted of 250 participants. There were 53 males, 196 females, and one indicating "other" ($M_{age} = 20.63$ years, $SD_{age} = 3.81$). Among all, 189 self-identified as White, 26 as Asian, 14 as Hispanic/Latino, 12 as Black, and 9 as "other." We ran another post hoc power analysis as done in Study 1 and found that our study could achieve a statistical power of .98.

4.1.3. Measurement

We adopted the same measurements as used in Study 1, including perceived similarity (*Cronbach's α* = .91, $M = 2.24$, $SD = 1.56$), perceived autonomy (*Cronbach's α* = .81, $M = 2.87$, $SD = 1.45$), player–avatar identification (*Cronbach's α* = .76, $M = 2.36$, $SD = 1.38$), narrative engagement (*Cronbach's α* = .75, $M = 4.02$, $SD = .91$), empathy (*Cronbach's α* = .98, $M = 3.46$, $SD = 1.52$), and prosocial intention (*Cronbach's α* = .89, $M = 4.92$, $SD = 1.41$). Notably, for participants assigned to the as-bully condition, they reported their empathy toward the four victim NPCs (which were then averaged); for participants assigned to the as-victim condition, their empathy was reported toward the four bully NPCs (which were then averaged). Table 2 presents the bivariate correlations. Descriptive statistics by experimental conditions can be found via the link in the Data Availability section.

Table 2. Bivariate correlations in Study 2.

	Perceived similarity	Perceived autonomy	Player–avatar identification	Narrative engagement	Empathy	Prosocial intention
Perceived similarity	—					
Perceived autonomy	.29**	—				
Player–avatar identification	.51***	.48***	—			
Narrative engagement	.19**	.35**	.41***	—		
Empathy	.06	.00	−.01	.07	—	
Prosocial intention	−.05	.10	.22***	.15*	.10	—

Notes: * $p < .05$; ** $p < .01$; *** $p < .001$; all 2-tailed.

4.2. Results

4.2.1. Original Model

We specified the same original path analysis model as that in Study 1 using SPSS Amos 26 (IBM, 2022). The overall model fit improved as compared to the original model in Study 1, χ^2 (DF = 36) = 94.80, $p < .001$, CFI = .844, TLI = .757, RMSEA = .081 (90%CI [.061, .101], PCLOSE = .006).

Figure 4 and Figure 5 present path coefficients for each version of the player perspective manipulation. To answer RQ1, we further performed multi-group analysis to compare models based on player perspective, as shown in Table 3. Overall, the findings supported H1, H2, H4, and H5, and rejected H8 across the two player perspective conditions.

There are two hypothesized associations that are significantly different between the as-victim and the as-bully conditions, based on the multi-group analysis. First, in partial support of H3, when playing the game as the victim, participants' player–avatar identification was positively associated with their narrative engagement, which was not observed in the as-bully condition. Second, we found a significant positive association between empathy and prosocial intention when participants played the game as a bully (rather than as a victim), offering partial support to H9.

Furthermore, as shown in Figure 5, in the as-bully conditions only, we observed a significant positive association between perceived autonomy and narrative engagement, and between narrative engagement and empathy. These findings provided partial support to H6 and H7.
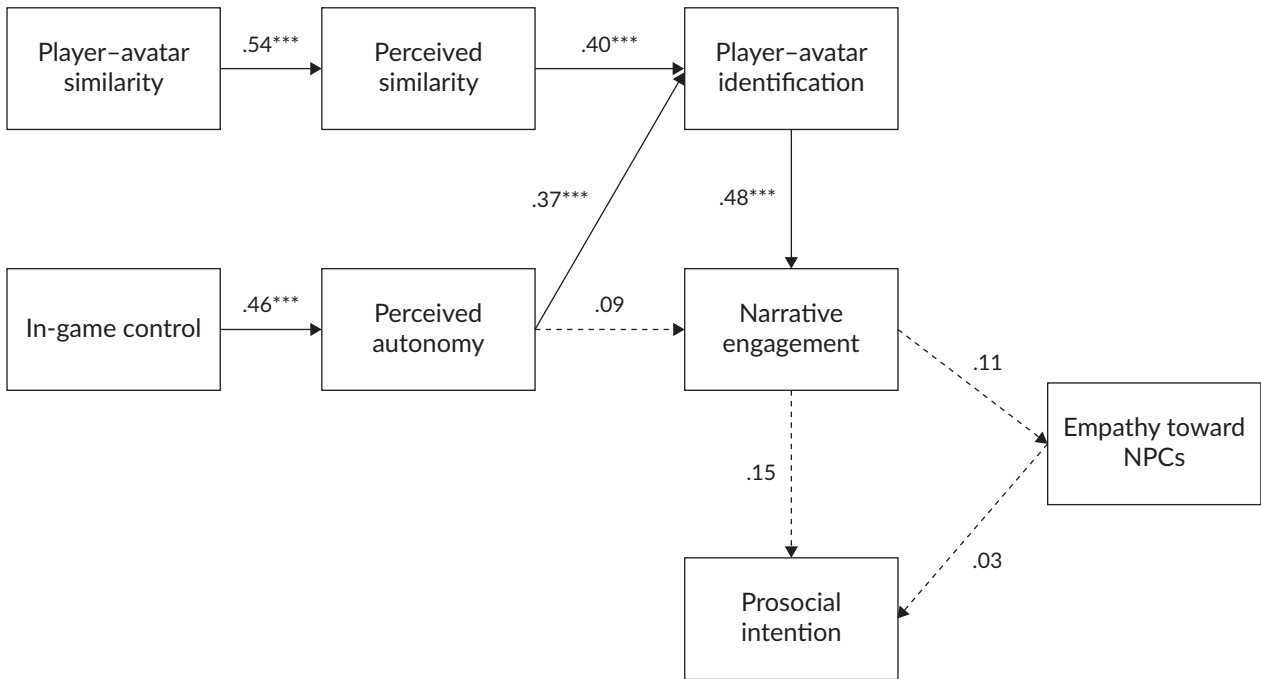
Figure 4. Path analysis model with standardized coefficients (*β*) in Study 2 (player perspective = as victim). Note: *** *p* < .001.
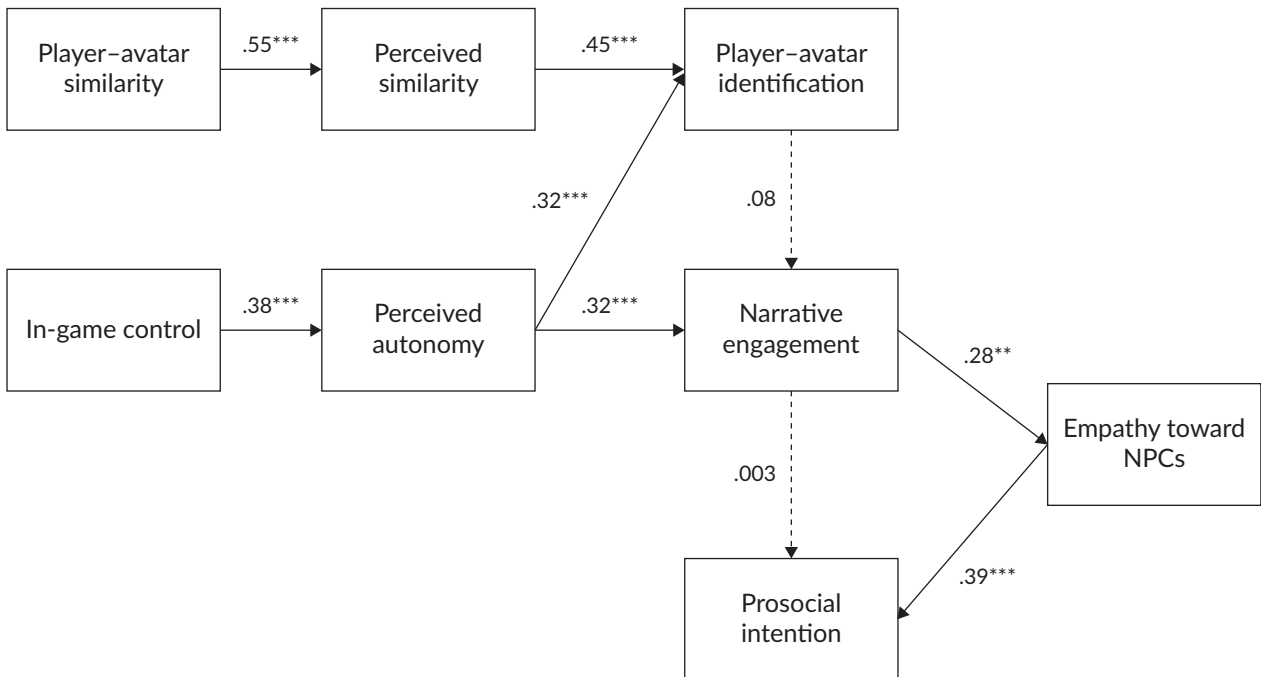

Figure 5. Path analysis model with standardized coefficients (*β*) in Study 2 (player perspective = as bully). Note: *** *p* < .001, ** *p* < .01.

Table 3. Invariance tests between play-as-victim and play-as-bully perspectives in the original model.

	χ^2	df	$\Delta\chi^2$	Δdf	p	RMSEA	ΔRMSEA
Base model	94.80	36				.081	
Equal loadings	115.73	45	20.93	9	.013	.080	−.001
Constraining player–avatar similarity → perceived similarity	95.32	37	.29	1	.591	.080	−.001
Constraining in-game control → perceived autonomy	95.09	37	.51	1	.472	.080	−.001
Constraining perceived similarity → player–avatar identification	94.86	37	.06	1	.806	.079	−.002
Constraining perceived autonomy → player–avatar identification	96.05	37	1.25	1	.263	.080	−.001
Constraining player–avatar identification → narrative engagement	103.38	37	8.58	1	.003	.085	.004
Constraining perceived autonomy → narrative engagement	97.63	37	2.83	1	.093	.081	0
Constraining narrative engagement → prosocial intention	96.08	37	1.28	1	.258	.080	−.001
Constraining narrative engagement → empathy	97.99	37	3.19	1	.074	.082	.001
Constraining empathy → prosocial intention	101.25	37	6.45	1	.011	.084	.003

4.2.2. Modified Model

We specified the same modified model to remain consistent with that in Study 1. The model fit improved when compared with the original model in Study 2, χ^2 (DF = 30) = 62.16, p = .001, CFI = .914, TLI = .840, RMSEA = .066 (90%CI [.042, .089], PCLOSE = .125). Figure 6 and Figure 7 present the path coefficients, while Table 4 presents the model comparisons.

The findings were mostly consistent with those in the original model. For the newly added paths, the association between perceived similarity and empathy significantly differed between the as-victim and the as-bully conditions based on the multi-group analysis. That is, when playing the game as the victim, participants' perceived similarity was positively associated with their empathy toward the NPCs, which was not observed in the as-bully condition.

5. General Discussion

Through two studies, we explored serious games as a means to tackle an important social issue—school toxicity—based on the unique engaging experience that video games can leverage for persuasion. First, our results extend prior work on player–avatar similarity (M. Chen et al., 2024) to the context of game-based bullying intervention, by confirming the effectiveness of matching a player with their controlling avatar based on demographic attributes to enhance their identification with the avatar. Study 2 further suggests that when people assumed the role of bully (rather than victim), the association between identification and narrative engagement weakened and became statistically non-significant.
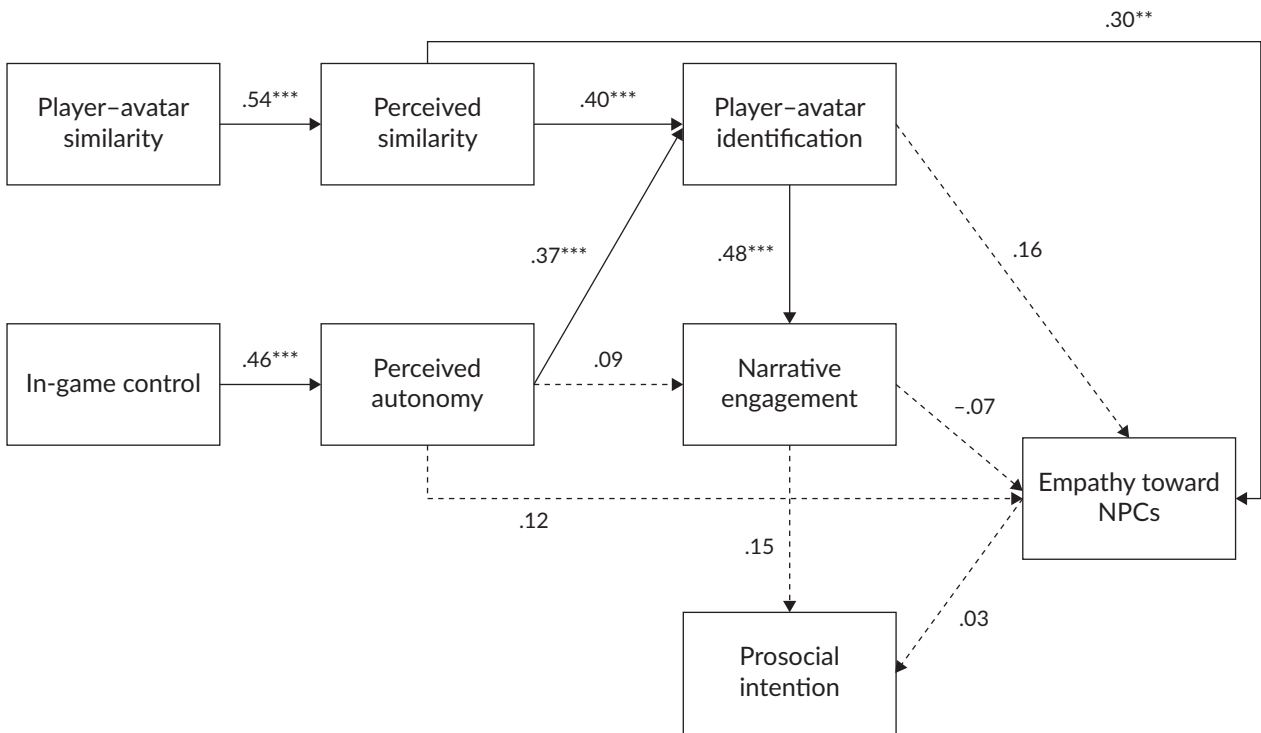
Figure 6. Modified path analysis model with standardized coefficients (*β*) in Study 2 (player perspective = as victim). Note: *** *p* < .001, ** *p* < .01.
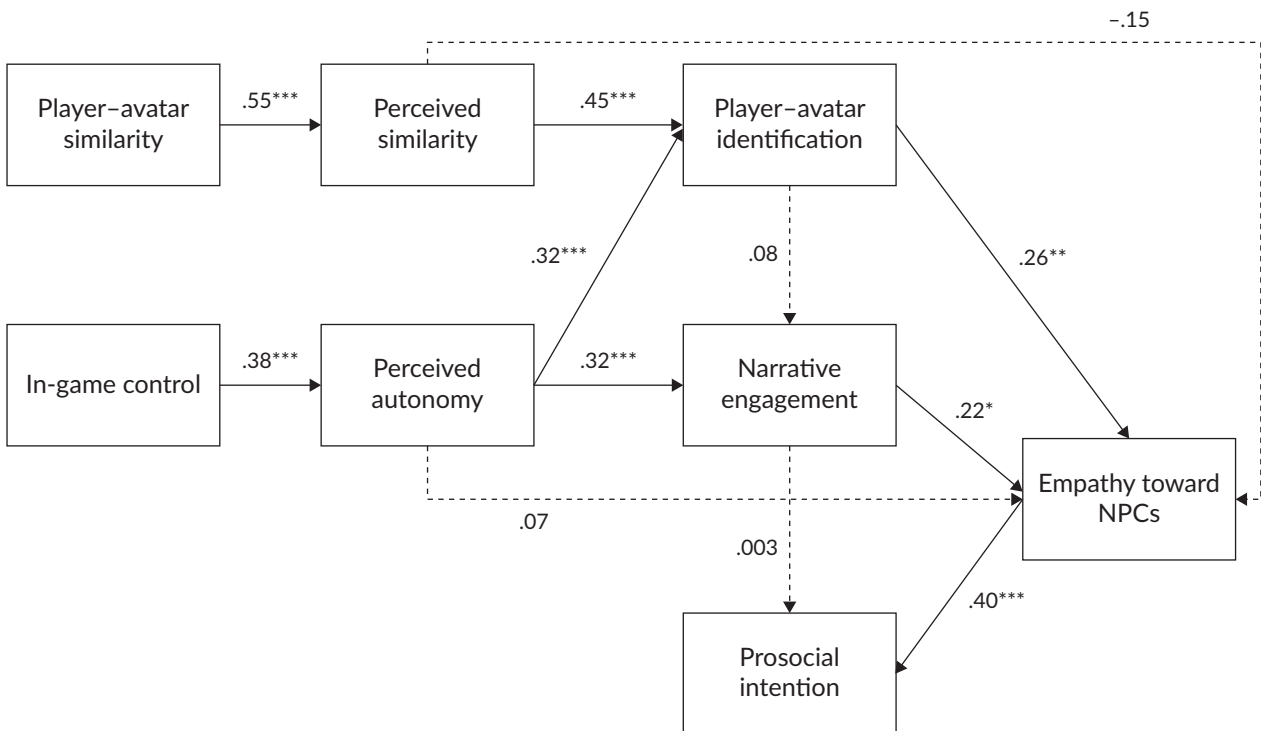

Figure 7. Modified path analysis model with standardized coefficients (*β*) in Study 2 (player perspective = as bully). Note: *** *p* < .001, ** *p* < .01, * *p* < .05.

Table 4. Invariance tests between play-as-victim and play-as-bully perspectives in the modified model.

	χ^2	df	$\Delta\chi^2$	Δdf	p	RMSEA	ΔRMSEA
Base model	62.16	30				.066	
Equal loadings	94.63	42	32.48	12	.001	.071	.005
Constraining player–avatar similarity → perceived similarity	62.44	31	.29	1	.591	.064	−.002
Constraining in-game control → perceived autonomy	62.67	31	.52	1	.472	.064	−.002
Constraining perceived similarity → player–avatar identification	62.22	31	.06	1	.806	.064	−.002
Constraining perceived similarity → empathy	71.32	31	9.16	1	.002	.072	.006
Constraining perceived autonomy → player–avatar identification	63.41	31	1.25	1	.263	.065	−.001
Constraining perceived autonomy → empathy	62.20	31	.05	1	.824	.064	−.002
Constraining player–avatar identification → narrative engagement	70.73	31	8.58	1	.003	.072	.006
Constraining player–avatar identification → empathy	63.75	31	1.59	1	.207	.065	−.001
Constraining perceived autonomy → narrative engagement	64.98	31	2.83	1	.093	.066	0
Constraining narrative engagement → prosocial intention	63.44	31	1.28	1	.258	.065	−.001
Constraining narrative engagement → empathy	67.51	31	5.35	1	.021	.069	.003
Constraining empathy → prosocial intention	68.61	31	6.45	1	.011	.070	.004

Second, when it comes to in-game control, our findings corroborated the link between (sense of) autonomy and identification in existing research (Birk et al., 2016). Yet, as shown in Study 2, the association between (sense of) autonomy and engagement observed in prior work (e.g., Kim et al., 2015) was further subject to player perspective such that only acting as the bully was able to engage players with the storytelling.

Third, adding to both conceptual and empirical work (e.g., Eekhof et al., 2022; Wulansari et al., 2020), our findings substantiated the link between narrative engagement and empathy, especially when players were instructed to take the bully's perspective. With the imposed bully perspective, we further found the association between empathy and prosocial intention, thereby extending relevant prior research (Davis, 2006; Prot et al., 2014) by illuminating the boundary conditions.

Notably, in both studies, we also reported modified models with a better model fit to offer insights for future research. However, we do want to note the risks associated with this data-driven approach. While our original model did not fit the data well, it was developed based on relevant theoretical work. Therefore, our findings need to be carefully interpreted through the lens of both types of models, and the modified models are in greater need of replication.

In the next sections, we discuss the implications of these results, followed by suggestions for future directions.

5.1. Implications

The theoretical implications of our study are two-fold. First, we demonstrated the potential of serious games as one important genre of entertainment media for facilitating prosocial outcomes. Rather than exerting direct persuasive influences, serious games can induce social influence through persuasive game features as the enabler of engaging experience with the gameplay, in line with previous research on narrative persuasion (Moyer-Gusé, 2008).

Second, informed by research on narrative effects and empathy (Oliver et al., 2012; L. Shen, 2010), we explored empathy as an additional mechanism that might potentially help to overcome resistance to persuasion in role-playing serious games. Echoing and extending the perspective that generating empathy requires one's cognitive capacity (Cameron et al., 2019), we further found that whose cognitive capacity was used also matters. That is, only when people took the perspective of a bully did being engaged with the story increase their empathy toward the target NPCs with desirable behavioral implications. These findings provided critical preliminary insights into the boundary conditions with respect to creating empathy in persuasive games.

Practically, our studies encourage pertinent stakeholders (e.g., game designers, educators, and administrators) to closely examine the intended and unintended consequences resulting from persuasive game features that influence player experience when compared to static educational programs (Annetta, 2008). Across the two studies, we found relatively consistent effects of in-game control on enhancing player experience, making it a critical game feature to consider when designing relevant narrative-based serious games for prosocial outcomes. That said, the different model performances subject to player perspective (as shown in Figures 3–6) would caution relevant stakeholders when considering from which perspective a story should be told in serious games.

5.2. Limitations and Directions

In both studies, we observed relatively low mean scores for perceived similarity, perceived autonomy, and player–avatar identification, which might result from the limitations of our game designs. Despite our efforts to achieve player–avatar matching based on gender and race, participants in the high similarity conditions might still perceive their controlling avatar as not looking like themselves or a real person in their life, thereby finding it challenging to internalize the identity and experience of the avatar. Perhaps a game in which users could select avatars with whom they identify or a game design with more realistic graphics could help address this. Another factor limiting perceived similarity could be the stylized graphics used for avatars. While in-game texts reinforcing the identity (e.g., "I think I identify most with Asian" said by the player's controlling avatar in the introductory scene) were included as part of our game design, more could be done to signal identity both textually and visually.

Related to this, the serious game that we designed for the two studies is relatively simple and straightforward, and did not grant players many opportunities to explore the game world outside the programmed interaction scenes. This could help explain the lower sense of autonomy than expected. A game with more flexibility in the order of play could be advantageous. At the same time, however, too much freedom for players might distract them from the intended message or reduce the likelihood of exposure to key elements.

In both studies, the original model fit was shy of traditional cutoffs. This suggests that the underlying theory supporting that model may have been inadequate or incorrect. Some key mechanisms not included in our measures could require consideration, such as reactance, social norms, or social presence. Alternatively, with the modified models, we found some significant direct associations between one's perception of/experience with their in-game avatar and their empathy toward NPCs, without narrative engagement serving as a mediator. This might suggest that existing models of persuasion through narrative-based entertainment are insufficient to explain the potential effects of serious games.

Another consideration for future research could be expanding the persuasive message beyond simple narrative elements. Perhaps developers could integrate the consequences of bullying into the procedural rhetoric of the game, reinforcing the consequences for self-esteem or social connections through gameplay mechanics or rewards. Additionally, the game could more explicitly discourage bullying rather than relying on empathy to discourage the behavior, although this might risk triggering reactance.

6. Conclusion

In conclusion, narrative-based serious games can persuade for prosocial purposes without engaging explicit persuasive messaging. Instead, certain game features have shown promise in promoting prosocial action tendencies through deepening players' engagement with storyline and creating empathy toward the interactant NPCs. Scholars and practitioners in the broad field of entertainment education could consider incorporating narrative-based serious game development with persuasive game features to facilitate prosocial communication and behaviors.

Conflict of Interests
The authors declare no conflict of interests.

Data Availability
Details of the game design and the measurement and descriptive statistics can be found at https://osf.io/wvsyj/?view_only=31434489d87246e9ab926c35983cab6d. Other data underlying this article are available upon reasonable request.

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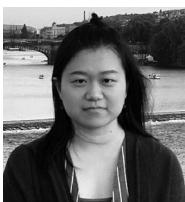
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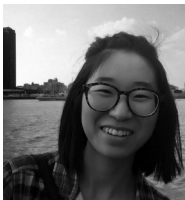
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